

**CLOSED
SANITATION INC.
LICENSE NUMBER 291**

DAMSCHEN & ASSOCIATES

SPRING 1998 MONITORING

SEPTEMBER 1998

**IS LOCATED IN THE GROUNDWATER
MONITORING REPORTS ARCHIVE,
BOX NUMBER 2**

RECEIVED 9/30/1998



**CLOSED
SANITATION INC.
LICENSE NUMBER 291**

DAMSCHEN-ENTRANCO

**AUTUMN 1999 GROUND-WATER
MONITORING EVENT**

JANUARY 2000

**IS LOCATED IN THE GROUNDWATER
MONITORING REPORTS ARCHIVE,
BOX NUMBER 2**

RECEIVED 1/25/2000

REPORT
ON THE
PROGRESS OF THE
WORK DURING THE
YEAR 1900

BY THE
DIRECTOR

OF THE
BUREAU OF
THE
LAND OFFICE

WASHINGTON

PRINTED BY THE
GOVERNMENT
PRINTING OFFICE
WASHINGTON

1901

**CLOSED
SANITATION INC.
LICENSE NUMBER 291**

DAMSCHEN-ENTRANCO

**SPRING 1999 GROUND-WATER MONITORING
EVENT**

NOVEMBER 1999

**IS LOCATED IN THE GROUNDWATER
MONITORING REPORTS ARCHIVE,
BOX NUMBER 2**

RECEIVED 11/11/1999

THE
NATIONAL
INSTITUTION

OF THE

THE
NATIONAL

OF THE

THE
NATIONAL

OF THE

**CLOSED
SANITATION INC.
LICENSE NUMBER 291**

DAMSCHEEN & ASSOCIATES

**AUTUMN 1998 GROUND-WATER
MONITORING**

JANUARY 1999

**IS LOCATED IN THE GROUNDWATER
MONITORING REPORTS ARCHIVE,
BOX NUMBER 2**

RECEIVED 1/14/1999

RECEIVED
FEBRUARY 1964
LIBRARY OF CONGRESS

AMERICAN UNIVERSITY

LIBRARY OF CONGRESS
WASHINGTON, D.C.

LIBRARY OF CONGRESS

IN THE LIBRARY OF THE
CONGRESS OF THE UNITED STATES
OF AMERICA

LIBRARY OF CONGRESS

FILE TYPE	PAGES	DATE	FROM	TO	RE
GWMonit 98-99-Sec.2	15	10/21/98	Energy Laboratories, Inc	Damschen & Associates	EPA Method 8260A: Volatile Organics Analysis Report/ Water Analysis Report
GWMonit 98-99-Sec.2	multiple	12/28/98	Kruskal-Wallace Test	Sanitation, Inc	Water Analysis Reports
GWMonit 98-99-Sec.2	15	10/21/98	Energy Laboratories, Inc	Damschen & Associates	EPA Method 8260A: Volatile Organics Analysis Report/ Water Analysis Report
GWMonit 98-99-Sec.2	6	01/11/98	Bruce Siegmund	Pat Potts	Letter w/ results of the 1998 ground-water monitoring at the landfill
GWMonit 98-99-Sec.2	41	09/28/98	Bruce Siegmund	Pat Potts	Letter w/ results of the 1998 ground-water monitoring at the landfill
GWMonit 98-99-Sec.2	15	10/21/98	Energy Laboratories, Inc	Damschen & Associates	EPA Method 8260A: Volatile Organics Analysis Report/ Water Analysis Report
GWMonit 98-99-Sec.2	multiple	12/28/98	Kruskal-Wallace Test	Sanitation, Inc	Water Analysis Reports
GWMonit 98-99-Sec.2	21	01/11/98	Bruce Siegmund	Pat Potts	Letter w/ results of the 1998 ground-water monitoring at the landfill
GWMonit 98-99-Sec.2	17	07/09/99	Energy Laboratories, Inc	Damschen & Associates	Laboratory Analysis Report
GWMonit 98-99-Sec.2	multiple	11/09/99	Kruskal-Wallace Test	Damschen & Associates	Water Analysis Reports
GWMonit 98-99-Sec.2	1	08/01/96	Barry Damschen	Sanitation, Inc	Site Plan Blue Print
GWMonit 98-99-Sec.2	3	11/09/99	Bruce Siegmund	Pat Potts	Letter re: results of the 1999 ground-water monitoring at the landfill
GWMonit 98-99-Sec.2	1	08/01/96	Barry Damschen	Sanitation, Inc	Site Plan Blue Print
GWMonit 98-99-Sec.2	10	10/19/99	Energy Laboratories, Inc	Damschen & Associates	Laboratory Analysis Report
GWMonit 98-99-Sec.2	multiple	01/20/00	Bruce Siegmund	Pat Potts	Letter w/ results of the 1999 ground-water monitoring at the landfill
GWMonit 98-99-Sec.2	multiple	08/28/00	Bruce Siegmund	Pat Potts	Letter w/ results of the 2000 ground-water monitoring at the landfill

**THIS FACILITY IS IN FORMAL
LITIGATION.**

**PLEASE DO NOT FILE ANY
DOCUMENTS IN THIS FILE.**

**PLEASE GIVE ALL DOCUMENTS
TO CAROL UTICK SO THAT THEY
CAN BE LOGGED INTO THE DATA
BASE AND THEN PUT INTO THE
FORMAL LITIGATION FILE.**

THANK YOU.

DATE 3-12-99

THIS FACILITY IS FOR THE
USE OF THE
PERSONNEL

PLEASE DO NOT
ENTER IN THIS FILE

PLEASE GIVE ALL DOCUMENTS
TO THE OFFICE OF THE
DIRECTOR OF THE
BUREAU OF THE
INTERNAL SECURITY
DIVISION

THANK YOU

County: Zeigler
Facility & # Sanit Inc 291
Closure
Finan Assur
GW Corr Meas
GW Monitoring camp
GW Reports
Inspections
Other:

Landfarm
Liner
Methane
O & M
Run - On

Montana Department of

Environmental Quality

MEMO

To: rick t.
From: pat p.
Date: January 22, 1999
Subject: gw @ Sanitation Inc.

The originally licensed location of the Sanitation Inc. solid waste facility is on an east-west trending topographic ridge. Bedrock is composed of the shales, claystones, and sandstones of the Kootenai Formation of Cretaceous Age. On the ridge, bedrock is covered by a thin veneer of light brown silt. Natural surface drainages flank this localized ridge on the north and south. Breed Creek is located on the north side, and Boyd Creek is on the south. The silt is considerably thicker here, forming a valley-fill/alluvium material in the drainages.

On the ridge, precipitation and moisture from the waste infiltrate the shallow silt layer until it reaches a lower permeability shale bedding plane. The water then travels locally downgradient along the bedding plane(s), also penetrating localized fractures in the shale, until contacting the more permeable valley-fill alluvial material in the drainage(s). Moisture can also travel vertically downward by penetrating localized fractures in the bedding planes until encountering another less permeable surface/bedding plane. The drainage are initially sourced in the mountains, however along their reaches they are gaining streams adding water most of the year from surrounding ground water, springs and/or seeps.

Ground water gradient in the valley-fill/alluvium is to the west. Regional gradient of the bedrock is northwest, according to Damschen (April, 1995). Locally, gradient may be relatively flat. Also, due to the blockiness and locally discontinuous nature of some of the shales, migration pathways may be unpredictable. Ground water monitoring wells (3) presently located on the site, monitor a very localized, limited volume, shallow aquifer(s) perched on the lower permeable shale bed(s). Trace levels of volatile organic compounds (VOCs) have been detected in all 3 sampling locations. The facility has never been notified regarding Assessment Monitoring criteria based on the VOC detections because, the existing wells have never been approved by the Program as being adequate ground water monitoring network for this facility.

Presently, solid waste has encroached beyond the originally licensed area onto the alluvium associated with Breed Creek and Boyd Creek (see Figure 2, Damschen; April, 1995). The shales directly beneath the landfill appear to be hydraulically connected to the alluvium in the drainage. Domestic supply wells are located downgradient from the site, with many of these wells completed in the alluvium. It is important the quality of the alluvial aquifer system be

MEMO

The first of the two main parts of the report is a description of the work done during the period covered by the report. This part is divided into two sections, one dealing with the work done in the laboratory and the other with the work done in the field. The second part of the report is a discussion of the results of the work and a comparison of these results with those obtained by other workers in the same field.

The work done in the laboratory was of a preliminary nature and was intended to determine the range of conditions over which the reaction could be studied. This work was carried out by the use of a special apparatus which was designed for the purpose. The results of this work are given in the first section of the report. The work done in the field was of a more extensive nature and was intended to determine the effect of various factors on the reaction. This work was carried out by the use of a special apparatus which was designed for the purpose. The results of this work are given in the second section of the report.

The results of the work done in the laboratory show that the reaction can be studied over a wide range of conditions. The results of the work done in the field show that the reaction is affected by a number of factors, including temperature, pressure, and the concentration of the reactants. These results are in good agreement with those obtained by other workers in the same field. The work done during the period covered by the report has been of a preliminary nature and is intended to determine the range of conditions over which the reaction can be studied. This work was carried out by the use of a special apparatus which was designed for the purpose. The results of this work are given in the first section of the report.

The work done during the period covered by the report has been of a preliminary nature and is intended to determine the range of conditions over which the reaction can be studied. This work was carried out by the use of a special apparatus which was designed for the purpose. The results of this work are given in the first section of the report. The work done in the field was of a more extensive nature and was intended to determine the effect of various factors on the reaction. This work was carried out by the use of a special apparatus which was designed for the purpose. The results of this work are given in the second section of the report.

monitored.

The Program strongly suggests at a minimum, 2 downgradient monitoring wells be located along the flanks of the topographic ridge where the alluvium extends up the branches/coulees/depressions of the drainage(s) immediately emanating from the landfill disposal areas on the site. Two monitoring wells on the north side of the landfill, and 2 on the south side. These wells should not be very deep, as there is surface water evident in the creeks. Two background wells (located east of the waste disposal area) will be necessary in each of the respective drainages so that any variations in natural water quality from one drainage to the other can be statistically compared, to the appropriate downgradient wells.

- Potential impacts from the Class IV/III cells.

Q.1. Are these cells adequately monitored at this time by existing GW net work.

Q.2. Is the waste in the coulee to the west adequately monitored. If so, what are the impacts to the GW as a result of waste being placed in that location.

Q.3.

